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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/037,337
Filing Date: December 21, 2001
Appellant(s): COPELAND ET AL.

Alan M. Weisberg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/15/07 appealing from the Office action mailed 12/28/04.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,345,222	Davies et al.	9-1994
5,567,537	Yoshizawa et al.	10-1996
6,118,378	Balch et al.	9-2000
5,371,490	Martinides	12-1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. **Claims 16-19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al.

1) In considering claims 16-18, Davies et al. discloses:

--an antenna for use in an electronic article surveillance system (Figs. 5 & 8, and col. 1, lines 6-11), comprising: a core comprising a central member (54 of Fig. 5) disposed between a wrap-around member (53 in Fig. 5) having top and bottom portions (relative to the central member 54) that are of equal length to each other but are shorter than the central member.

While Davies et al. does not disclose the claimed first and second outer members, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that wrap-around member 53 would have functioned the same as separate top and bottom members in an antenna such as taught by Davies et al. as a structural aspect between the coil and the central member, since the wrap-around member 53 can conceptually be separate top and bottom members joined at their seams, or integrated, at the two side edges, and thus the antenna in Davies et al. can alternatively be formed by two separate top and bottom members 53 sandwiching the central member 54 without unexpected result.

2) In considering claim 19, Davies et al. disclosed all of the claimed subject matter, except:

--the claimed about 30 cm for the first and second lengths for the outer members and about 50 cm for the third length for the central member.

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to choose various dimensions of the outer and central members in an antenna construction and housing such as taught by Davies et al., including about 30 cm for the first and second lengths for the outer members and about 50 cm for the third length for the central member, based on the particular antenna size and antenna housing design desired for specific application and application environment.

2. **Claims 12-15, 20-25 and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al. in view of Yoshizawa et al. (US pat. #5,567,537).

1) In considering claim 23:

a) Davies et al. teaches that in electronic article surveillance systems (EAS) (col. 1, lines 6-11 and Fig. 8) solid cored coil antennas have advantages over air cored coil antennas such as lower overall size and considerably more confined magnetic flux (col. 1, line 12 to col. 2, line 6), and furthermore that such solid cored coil antennas can be used for interrogation as well as detection of EAS tags (col. 2, lines 50 & 62 and col. 5, lines 31-33), wherein specifically the antenna (Figs. 1, 5, 8) comprises a core (53 & 54 of Fig. 5) of elongate solid rectangular shape having first and second ends, the core is made of suitable materials of suitable effective relative magnetic permeability (col. 1, line 67 to col. 2, line 6 and disclosure corresponding to Fig. 5), and a coil winding of wire (51 of Fig. 5) disposed around at least a portion of the core (Fig. 5), said coil winding of wire insulated from said core (inherent in embodiment of Fig. 5), said core and coil winding being of a minimum size for generation of an electromagnetic field for interrogation and detection of EAS markers (col. 1, lines 53-54, wherein the antenna size is minimized as compared to an air core type coil antenna);

b) Yoshizawa et al. teaches a solid cored coil antenna in an interrogation-response system using a core formed by a plurality of amorphous alloy ribbons insulated from each other and stacked to form a substantially elongated solid rectangular shape having first and second ends, with a coil winding of wire disposed around at least a portion of the core and insulated from the core, provides for an antenna of minimum size for generation of a given electromagnetic field having characteristics for effective interrogation as compared to convention coils (air-core type coils) (Figs. 1-3 and corresponding disclosure), and that such an antenna provides improved performance while minimizing size (Abstract, whereby such a solid cored coil antenna enables even smaller dimensions of the antenna for a particular performance rating than that provided by the Davies et al. core material according to col. 2, lines 4-6).

In view of the teachings by Davies et al. and Yoshizawa et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the specific type of core material and coil antenna construction such as taught by Yoshizawa et al. for implementing the interrogation/detection coil antenna of a system such as taught by Davies et al. in order to **provide the intended antenna function** (i.e. providing the intended EAS interrogation function) but at a minimized size (within the design constraint of still retaining the intended EAS interrogation function), wherein such minimized antenna size is desirable in various EAS applications by minimizing the physical presence, and thereby the associated physical and psychological intrusiveness and unsightliness of the system in typical application environments such as business establishments.

2) In considering claims 24-25, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in claim 23, wherein:

--while Davies et al. and Yoshizawa et al. did not specify the same core dimensions (about 75 cm long, about 2 cm wide) and the number (about 60) of ribbons and each of their thickness (about 23 microns), and the wire gauge (24-gauge) and number of turns (90) for the coil as claimed, lacking any essential, specified and inherent characteristics/criticality and/or unexpected results such specific details would bring by the claimed structure (without necessitating further unclaimed, unspecified structures/components/elements), it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that the electromagnetic interrogation field generated from the interrogation antenna in a system such as taught by Davies et al and Yoshizawa et al. depends on a variety of parameters including the antenna driving current, the gauge, length and conductivity of the coil wire as well as the number of turns for the coil, and the magnetic characteristics of the core including specific composition, dimensions and size of the core, and furthermore the desired interrogation field depends on the intended/expected size and dimension of the interrogation zone as well as the response characteristics of the marker. Therefore, the core dimensions, the number of ribbons and each of their thickness, the wire gauge and number of turns of the antenna coil only account for some of the parameters for designing a particular intended application of a system such as taught by Davies et al. and Yoshizawa et al., and that such parameters can be chosen, including using the claimed parameter specification, in achieving the intended interrogation characteristics without unexpected results.

3) In considering claim 32, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in claim 23, including:

--the claimed Q value of the antenna of less than or equal to about 20 at an EAS operating frequency (Fig. 3 of Yoshizawa et al., whereby a Q value of about 20 or less correspond to an interrogation frequency of about 50 kHz or less, which one skilled in the art at the time of the claimed invention would have readily recognized that operating frequency can be selected as the EAS operating frequency of choice based on factors such as frequencies already operating in the environment of application, FCC regulations, the type of marker used, user preference, etc.).

4) In considering claims 12-14, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in the consideration of claim 23, including:

--the claimed core of stacked amorphous alloy ribbons includes a central member inserted at its center so that the stacked ribbons form first and second outer members that are of equal length but are shorter than the central member are met by the relationship between 54, 53 and 51 in Fig. 5 of Davies et al. as a specific housing structure for mounting to the antenna housing of Fig. 8 of Davies et al.

5) In considering claim 15, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in claim 14, wherein:

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to choose various dimensions of the outer and central members in an antenna construction and housing such as taught by Davies et al. and Yoshizawa et al., including about 30 Cm for the first and second lengths for the outer members and about 50 Cm for the third length for the central member, based on the particular antenna size and antenna housing design desired for specific application and application environment.

6) In considering claims 20-21, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in the consideration of claim 23.

7) In considering claim 22, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in claim 20, plus the consideration of claim 14.

3. **Claims 26-29 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al. in view of Yoshizawa et al. and Balch et al. (US pat #6,118,378).

1) In considering claims 26-27, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in claim 23, while:

--Balch et al. teaches the claimed electronic controller (88, 100) and switching transmitting/receiving arrangement operating in sequential pulsed mode (Figs. 3-4) as a known marker interrogation system using antennas for both transmitting and receiving (i.e. interrogation and detection).

Davies et al. and Yoshizawa et al. teaches a marker interrogation system in which an antenna is used for interrogation and detection of a tag, without further specifying the interrogation/detection circuitry including antenna control circuitry, while Balch et al. teaches using the claimed features in the control aspect of the interrogation/detection system. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the known control circuitry such as taught by Balch et al. for the complete implementation of a marker interrogation/detection system such as that taught by Davies et al. and Yoshizawa et al. without unexpected results.

4) In considering claims 28-29, Davies et al., Yoshizawa et al. and Balch et al. render obvious all of the claimed subject matter as in the consideration of claims 23 & 26, plus the

plurality of antennas shown in Fig. 4 of Balch et al., and the claimed first and second antennas selected by the controller to operate in respective transmit only and receive only modes are met by the selective sequential operation description of Figs. 3-4 of Balch et al.

5) In considering claim 31, Davies et al., Yoshizawa et al. and Balch et al. render obvious all of the claimed subject matter as in the consideration of claim 28.

4. **Claims 28-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davies et al. in view of Yoshizawa et al. and Martinides (US pat #5,371,490).

1) In considering claim amended claims 28-30, Davies et al. and Yoshizawa et al. render obvious all of the claimed subject matter as in the consideration of claim 23, while:

-- Martinides teaches electronic article surveillance system components (Abstract and Fig. 1) not specified by Davies et al. and Yoshizawa et al., having the claimed electronic controller and plurality of antennas (4 and antennas in Fig. 1) and transmitter and receiver means operating in non-pulsed mode (Abstract and Fig. 1, wherein no pulsed-mode operation was disclosed, making the system inherently non-pulsed), and the claimed first and second antennas selected by the controller to operate in respective transmit only and receive only modes are met by the sequential operation description of Fig. 1.

Davies et al. and Yoshizawa et al. teaches a marker interrogation system in which an antenna is used for interrogation and detection of a tag, without further specifying the interrogation/detection specifics including the number of antennas used and their control circuitry, while Martinides teaches using the claimed features in the control aspect of the interrogation/detection system. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the known control circuitry and multiple use of antennas

such as taught by Martinides for the complete implementation of a marker interrogation/detection system such as that taught by Davies et al. and Yoshizawa et al. to cover multiple zones.

3) In considering claim 31, Davies et al., Yoshizawa et al. and Martinides made obvious all of the claimed subject matter as in the consideration of claim 28.

(10) Response to Argument

Regarding Appellant's arguments for claims 16-19, while Davies et al. does not disclose the claimed first and second outer members, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to form the one-piece wrap-around member 53 of Davies et al. by using separate top and bottom members which are joined at the seams at the two side edges to form the "flux-confining box" and still function for its expressed intended purpose of containing magnetic flux, for situations such as when only smaller sections of the wrap-around member material are available or cost effective at the time of implementation. Appellant's argument that separating the wrap-around member in Davies et al. can no longer trap and conduct the magnetic flux around the flux-containing box is not persuasive, since the outcome would also depend on factors such as the separation distance, the material(s) involved (those of the members as well as any optional conjoining agent) that would effect the flux-conduction and containing characteristics, etc. The rejection is made under the rationale that one skilled in the art would have recognized that the wrap-around member of Davies et al. could be implemented by conjoining 2 separate top/first and bottom/second members. For examples, conjoining could be by adhesive, bonding, or other well known methods, that would still maintain the intended flux conduction purpose by using the appropriate materials and methods.

This is a case of integrated versus separate parts, which has antecedence as deemed obvious. Suggestion for such well known concepts of alternatives as integrated versus separate parts need not come directly from the cited prior art references themselves, but rather can also be based on common knowledge, common sense, logic, and/or the skill level of one of ordinary skill in the art. It is further noted that the claims did not expressly recite the first and second members are being "discrete" as appellant has argued, and as far as whether the Davies wrap-around member would perform in the same manner as the claimed device, the claims did not specify the exact role of the first and second members other than their location and generally being part of the overall antenna core. See above rejection for further detail of articulation of support for obviousness.

Regarding Appellant's comments for claims 12-15, 20-25 and 32, the combined teaching of Davies et al. and Yoshizawa et al. minimizes the antenna size using techniques/materials taught by Yoshizawa et al. for the EAS interrogation antenna of Davies et al. for its intended EAS interrogation function, that is, the antenna size is minimized within the context of not changing the antenna's intended EAS interrogation function. Such a modification would have been obvious to one skilled in the art, as explained in detail in the rejection, since Davies et al. provided the motivation for a smaller size antenna in the intended EAS interrogation antenna application by using a solid core versus an air core for the antenna, and Yoshizawa et al. provides teaching of using a amorphous ribbons as a solid core material for an antenna in the manner indicated in the rejection and taught by Yoshizawa et al. that would minimize the antenna size in relation to the antenna's electromagnetic functionality. The rejection did not suggest or indicate to replace the EAS interrogation antenna in Davies et al., with the IC-card-

reading antenna of Yoshizawa et al. which is not an EAS interrogation antenna, but rather to implement the teaching of using the amorphous ribbons aspects as an antenna core in the antenna of Yoshizawa et al. to provide the advantages of minimized antenna size and high Q value in Davies et al. in its intended EAS interrogation function, advantages which one skilled in the art would have recognized for the antenna function in Yoshizawa et al. in view of the combined teachings. High Q value leads to strong signal to noise ratio, and smaller sized antennas allow easier packaging and increased portability or space-saving, which all are applicable to various antennas, whether the antennas reside at the IC card or the interrogator that generates signals for interrogating a marker/tag (equivalent/analogous to the IC card in an interrogation system). Furthermore, it is noted that one skilled in the art would have readily recognized that in both Davies et al. and Yoshizawa et al., the objectives including high Q value and minimized antenna size were achieved in the context of their intended antenna functions, i.e. their antennas functioning as intended in their intended application while achieving those objectives. Yoshizawa et al. teaches providing a maximum Q value possible in the smallest antenna possible that achieves the intended application function, advantageous in antennas including that of Davies et al., and the claimed invention does not recite minimizing the Q value as, apparently erroneously, indicated by Appellant.

Contrary to Appellant's allegation that Claim 23 recitation of an antenna of "at least minimum size to generate an electromagnetic field" is the exact opposite of Yoshizawa's intention to "reduce the size of the antenna", the claim invention is directed to, as interpreted by Examiner, reasonably, "in order to generate a given, desired, electromagnetic field, an antenna of at least a minimum size to (i.e. capable of) generate that desired electromagnetic field", so that

the antenna, whose size is directly proportion to its ability to generate electromagnetic field in magnitude, needs to be at least able to generate the electromagnetic field desired, otherwise the antenna could not perform its intended function of generating the electromagnetic field needed for its intended function as the antenna design criteria. As is the case in antenna design, given a set of design criteria/limit, and within such design criteria/limit of some predetermined electromagnetic field, the antenna can be designed with minimized size. Otherwise, Appellant's interpretation of the claimed language would not make sense, in that, "an antenna of at least minimum size to generate an electromagnetic field" interpreted as Appellant indicated, would "at most be an infinite size", and in any case encompass the minimum/reduced size of Yoshizawa in scope. Appellant's argument that Yoshizawa's antenna is not large enough for interrogating an EAS tag is not relevant to the rejection and not persuasive, since the rejection is based on Davies et al. as a primary reference teaching an EAS interrogator antenna, modified by the specific antenna core material of Yoshizawa that makes antennas smaller for a given electromagnetic field strength.

Regarding claim 32, the rejection clearly establishes how the prior art renders the claimed invention obvious, including the claimed Q value limitation.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Benjamin C. Lee/

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